

Injector No. 81713, No. 81713A & No. 81770-1 thru 81770-6

Operating Instructions & Service Parts List



Injector type SL-1, model no. 81770-3

1. Foreword

Installation work, setting-up, operation and maintenance of Injectors and the Central Lubrication System shall be executed by qualified, trained personnel.

This User Manual is primarily intended to familiarize the user of *Centro-Matic* central lubricating equipment with the supplied product 'Injector' and its specifications. It shall also aid to identify parts by part number and parts for service part inventory.

2. Safety Instructions



Safety Symbol according to DIN 4844-W9

Warnings for exposure to hazards that may result in serious personal injury if ignored, are marked in the manual by the general safety symbol

CAUTION

Safety instructions that might result in equipment damage and machine malfunction if ignored, are marked by the word 'CAUTION'.

Also heed safety instructions of the manufacturer of the machine!

3. Specifications of the Product

Manufacturer LINCOLN St. Louis, Mo 63120-1578 USA <i>Contact customer service if requiring additional information or service:</i>	Sales & Service Lincoln GmbH & Co. KG Heinrich-Hertz-Str. 2-8 D-69190 Walldorf / Germany
--	--

⇒ See bottom line for telephone- and telefax number

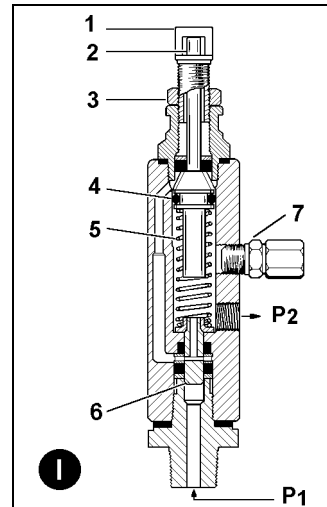
Designated Use

- Single-line metering device for grease up to class NLGI #2, for use in *Centro-Matic* single-line lubrication systems.
- Metering device for petroleum based lubricants; if using synthetic lubricants, the subject lubricant must be compatible with the construction parts (steel, FKM seals) of the injector.
- Designed for pressure range of 128-240 bar for operating during lubrication cycle and residual pressure < 41 bar between lubricating intervals in the pause time.

Note: The recommended operating pressure is 173 bar for the lubrication cycle.

Injector SL-1 can be used in a single-line circuit of injectors type SL-11, SL-V, SL-V XL, SL-32 or SL-33 in *Centro-Matic* central lubrication systems for grease.

Attention: When used together with injectors type SL-32 & SL-33 in a system, the pressure relief must be < 13 bar.



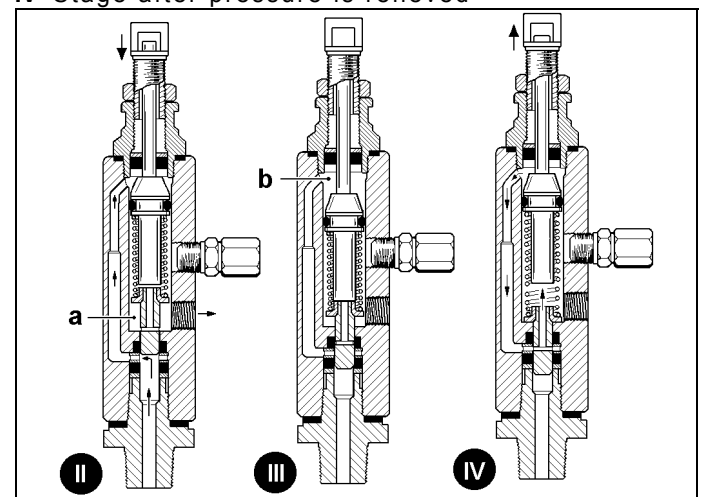
- 1 Adjusting screw
 - 2 Indicator stem (visual function indicator)
 - 3 Lock nut
 - 4 Piston with packing
 - 5 Spring
 - 6 Slide valve piston
 - 7 Second outlet, closed. Outlet for control of output, for pre-filling of feed line, also permits application of combined discharge of injectors through one feed line.
- P1** Inlet; grease supply line from pump.
P2 Outlet; grease feed line to lubrication point.

I Stage during pause time

II Stage on build-up of pressure and lubricating

III Stage after completion of lubricant discharge

IV Stage after pressure is relieved



a Discharge chamber

b Measuring chamber

General description

Principal operation of Injector SL-1

Fig. I Pause time. Injector relieved from pressure and spring (5) released. Discharge chamber (a) is filled with lubricant from the previous cycle. Chambers (a) and (b) connected through bores in valve piston (6) and passage.

Fig. II Pressure build-up and lubricating. The central lubrication pump builds up pressure in the lubricant supply line and inlet (P1) of the injector. Valve piston (6) forced to move under the pressure of incoming lubricant and opens the passage leading to the piston, admitting the flow of lubricant to the top of the piston into chamber (b) and forcing piston (4) down as well as causing the retract of indicator stem (2). Whilst the filling of chamber (b), the piston (4) forces a precharge of lubricant under pressure from the discharge chamber (a) through the outlet port (P2).

Note: The feed line to the lube point is connected either to P2 or to the (plugged) outlet above.

The working pressure (fluid pressure) of the pump must be at least 128 bar for lubricating and shall not exceed 240 bar. The recommended pressure for standard application of *Centro-Matic* single-line grease systems is 173 bar.

Injector No. 81713, No. 81713A & No. 81770-1 thru 81770-6

Fig. III Completion of the lubricating phase. As piston (4) completes its stroke, it pushes the slide valve piston (6) past the passage, cutting off further admission of lubricant to the passage. The discharge from chamber (a) of the preset amount of lubricant to the outlet is completed; piston and slide valve remain in this position until lubricant pressure in the supply line is vented (relieved) at the pump.

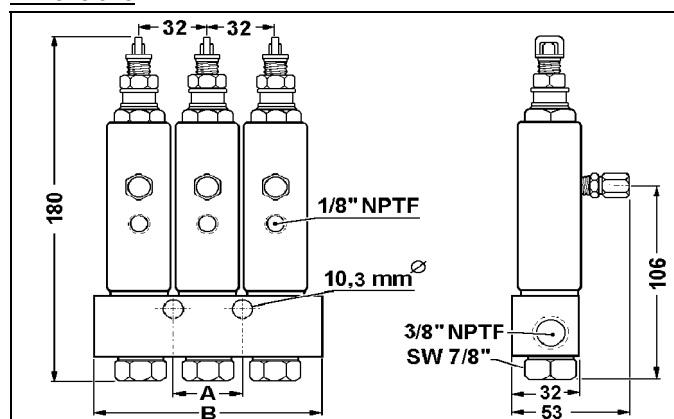
Fig. IV Pressure relief. After completion of the lubricating phase, the supply line (lubricant line between pump and injector) must be relieved from pressure. The pressure at injector inlet (P1) must drop below 41 bar. The re-charge with lubricant will be initiated at a pressure of ~ 41 bar, permitting the compressed spring (5) to release. The spring moves the slide valve to closed position. This opens the port from the measuring chamber and permits the lubricant to be transferred from the top of the piston (4) to the discharge chamber (a). After the preset amount of lubricant is shifted from chamber (b) to chamber (a) and the pressure is vented, the injector returns to its normal (rest) position (Fig. I).

Note: Injector SL-1 is a so-called 'direct' single-line metering device. The injector lubricates under pressure applied by the pump to the injector piston (4). The spring of the injector is only for re-charging purposes.

Injector output adjustment:

⇒ See Section 5 'Operation'.

Dimensions



Assy. Unit	Manifold	Dim. A	Dim. B
-1	No. 12658	*	64 mm
-2	No. 11962	*	76 mm
-3	No. 11963	32 mm	108 mm
-4	No. 11964	64 mm	140 mm
-5	No. 11965	95 mm	171 mm
-6	No. 246965	127 mm	203 mm

* Manifold with 1 mtg. hole

Technical Data

Injector type	Series SL-1		
Part number	81770 - * Injectors with manifold) ¹ 81713 Single unit injector w. thread) ² 81713A Replacement injector		
Output range	0,131-1,31 cm ³		
Output adjustment	Setting by adjusting screw, min. to max. = 8 turns) ³		
Operating pressure) ⁴	minimum	normal	maximum
	128 bar	173 bar	240 bar
	Vent pressure < 41 bar		
Constr. materials	Steel, Seals : FKM		
Amb. temperature (constr. materials)	TMIN		TMAX
	- 26° C		+ 176° C
Connections:			
Manifold	2 connections of 3/8" NPTF female		
Injector	Outlet: 1/8" NPTF female		

Note:

)¹ Character - * of part number stands for substitution by number of injectors mounted on manifold:

- 1, - 2, - 3, - 4, - 5, - 6.

)² Single unit injector not illustrated.

Injector inlet: 3/8" NPTF male.

)³ **Attention:** Check output if Adjusting Screw is adjusted to less than ½ turn from minimum.

)⁴ 'normal' = recommended operating pressure.

During pause time, after completion of the lubrication cycle, a pressure relief below 41 bar must follow.

Also note: When used together with injectors type SL-32 & SL-33 in a system, the pressure relief must be < 13 bar.

4. Erection & Installation

Warning



Never exceed the maximum working pressure of the *Centro-Matic* system.

Do not carry out any assembly or disassembly works when the system is pressurized or pump/machine are in operation.

CAUTION

Before using synthetic lubricants, check compatibility with the construction materials of injectors and other system components.

Required tools

Ring & Open end wrenches of inch-size series are required for the installation of injectors.

Mounting of injectors

The injectors have two outlets; one outlet must be closed by the fitting supplied with. The outlet for connecting the feed line has a female thread of 1/8" NPTF.

If the lube point (bearing) to be connected requires more than 1,31 cm³ of lubricant per lube cycle, the outlets of two or more injectors can be externally linked by a connector tube for combined discharge of lubricant; one connector tube is required for each injector connection.

The injector manifolds have a female thread of 3/8" NPTF at both ends.

Order connectors separately if required.

The manifolds have mounting holes; see figure above.

• Injectors can be mounted in any position.

Mount injector in a position which permits access for output adjustment and visual function control of the injector.

• Location of injectors

⇒ See drawing & instructions of the machine manufacturer.

• Allocation of injector/lubricating point

⇒ See drawing & instructions of the machine manufacturer.

LINCOLN GmbH & Co. KG * Postfach 1263 * D-69183 Walldorf * Fax + (49) 6227 33259 * Tel + (49) 6227 330

Injector No. 81713, No. 81713A & No. 81770-1 thru 81770-6

Note: Before operating the machine, for example after installation works or repairs:

- Main supply line / branch lines and injectors must be filled with lubricant and vented.
- Feed lines must be filled with lubricant and connected with lube points.
- The function of all injectors must have been checked.
- All injectors and the system control for the lubricating intervals must have been adjusted in compliance with the specifications.

⇒ See specific instructions of the machine manufacturer.

Functional check of injectors

The recommended system operating pressure is 173 bar; adjust pump and control system accordingly.

⇒ See User Manual of the relevant central lubrication pump / control system and injectors.

- Initiate manual starting of the lubricating cycle.

After the rising of the pressure to ~ 128 bar the indicator stem of the injector must be retracted; after pressure relief < 41 bar the indicator stem must return, back to rest position. Insufficient venting of the supply line system may impair the function of injectors.

Note: When used together with injectors type SL-32 & SL-33 in a system, the pressure relief must be < 13 bar.

When all injectors of the system have been checked and function properly:

Fill feed lines with lubricant.

Before connecting the feed lines to the lubricating points:

- Fill feed lines with lubricant.

Use only lubricant specified by the machine manufacturer for pre-filling.

- Fill lines with lubricant by means of a grease gun.

The feed line can be filled via the alternate outlet port in the injector body.

- Check feed line outlet for evidence of lubricant flow.
- Collect emerging lubricant at the end of the line.

When all lines have been filled:

- Connect feed lines.

Operation

During operation of the central lubrication system

- all injectors must have been set to the lubricant output specified by the machine manufacturer.
- the lubrication system controller must have been set to pause time as specified by the machine manufacturer.
- the required operating pressure (fluid pressure) for operating the injectors (lubricant discharge) as well as the subsequent pressure relief of the lubricant supply line for re-charge of the injectors have to be observed.

When the machine is put out of operation

- the central lubrication system must be switched off.

CAUTION

Excess lubrication or insufficient lubrication may result in machine damages.

Do not use contaminated lubricants.

Warning

Never exceed the admissible working pressure of the central lubrication system.
Switch off pump immediately in case of defects or abnormal operating performance.

When putting machine and central lubrication system in operation after a longer shut-off period:

- Check function of the central lubrication system.

Inspection and maintenance**Warning**

Never attempt to disassemble the equipment while pump is in operation or system is pressurized.
Do not perform adjustment of injectors while the system is pressurized.

- Check all lubricant lines and injectors regularly for leakproof and proper condition.
- Check function of the central lubrication equipment (pump/controller/injectors) regularly.
- Eliminate defects immediately.

Maintenance**Warning**

Never attempt to disassemble the equipment while pump is in operation or system is pressurized.
Before performing any works the machine must be out of operation.

Heed safety instructions of the machine manufacturer.

If machine components being also part of the central lubrication system were removed for service, they shall be properly reassembled before the machine is operated again. Then check the function of the centralized lubrication system as specified. The same applies to maintenance work performed on parts of the *Centro-Matic* central lubrication system.

Avoid contamination of the indicator stem in order to prevent premature wear of the injector seal. If necessary, provide protective injector cover cap;

No. 83272 Cover Cap, Vinyl plastic material.

Trouble shooting

⇒ See User Manual of the relevant central lubrication pump.

⇒ See User Manual of the relevant system control & monitoring equipment and instructions of the manufacturer of the machine.

CAUTION

Operation of the machine with inactive or defective central lubrication system will cause damages to the machine.

⇒ See instructions of the machine manufacturer.

Malfunction of individual lubricant metering devices or damaged lubricant feed lines will cause damage of parts connected to because of lack of lubrication.

6. Repair

Repairs must be carried out by qualified, trained personnel only.

**Warning**

Do not disassemble injectors when pump/central lubrication system are pressurized.

Before performing any works the machine must be out of operation.

Before servicing shut off pump/central lubrication system and perform pressure relief procedure. Depressurize pump and supply line system.

Always collect lubricant in a can.

After repair of injectors:

- Check function of injectors.
- Replacement Injector no. 81713A recommended for service parts inventory. Permits change of injector without remove of the injector manifold.

After repair, before restart of normal operation of the machine/central lubrication system:

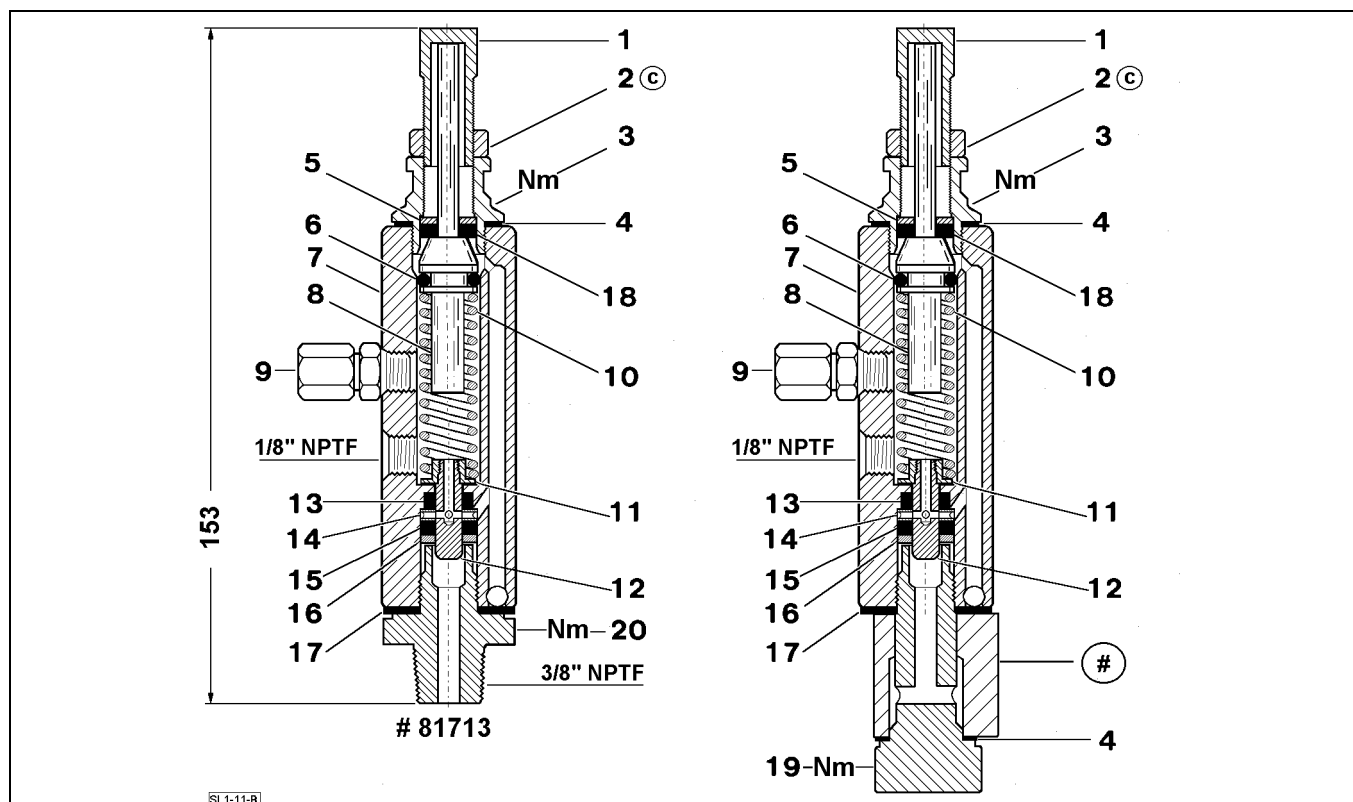
- Adjust output of the relevant injectors as described.
- Vent lubrication line system and check function of the central lubrication system.

Injector No. 81713, No. 81713A & No. 81770-1 thru 81770-6

Service parts drawing

Injector SL-1,

Ser. H



Attention: Adhere to torque specifications on re-assembly

Item 3	Piston stop plug	torque	34-40,5	Nm
Item 19	Adapter bolt	torque	61-67,8	Nm
Item 20	Adapter	torque	61-67,8	Nm

MANIFOLDS Item

No. 12658	1-unit	No. 11964	4-unit
No. 11962	2-unit	No. 11965	5-unit
No. 11963	3-unit	No. 246965	6-unit

Note: Single Unit Injector no. 81713 ref. to left figure.

Replacement Injector no. 81713A for use on manifold consists of item 1 thru 19

Item # Manifold ref. to chart

© = change

- Note -

The thickness of Lock Nut item 2) has been increased from 3,8 mm to 7,6 mm. Therefore the maximum output setting by item 1) changed to 8 turns (was 12 turns).

Service parts list

Injector SL-1,

Ser. H,

no. 81713A and no. 81770 - **

Item	Description	@	Qty.	Part no.	Item	Description	@	Qty.	Part no.
1	ADJUSTING SCREW		1	11623	15	PACKING, FKM	●◆	1	-
2	LOCK NUT (hex. 5/8")		1	11624	16	WASHER	●	1	-
3	PISTON STOP PLUG		1	11450	17	GASKET		1	31064
4	GASKET	●	2	-	18	PACKING, FKM	●◆	1	-
5	WASHER	●	1	-	19	ADAPTER BOLT (hex. 7/8")		1	11961
6	O-RING, FKM	●◆	1	-					
7	INJECTOR BODY ASSY.		1	241427					
8	PISTON w. indicator stem	●	1	-	20	ADAPTER		1	13216
9	FITTING ASSY.		1	90471		used on injector no. 81713			
10	PLUNGER SPRING	●	1	-					
11	SPRING SEAT	●	1	-					
12	PLUNGER	●	1	-	#	MANIFOLD			see chart
13	PACKING, FKM	●◆	1	-		with 2 inlet connections of 3/8" NPTF female			
14	INLET DISC	●	1	-	column @:	●	Item included in no. 250158 Repair Kit		
					column @:	◆	Item included in no. 246000 Soft Parts Kit		

Subject to change